U. S. Patent Office rejected the Wrights' patent application twice, the brothers hired patent lawyer Henry Toulmin, who persuaded the brothers to include in their patent application the brothers' three-axis system of control, including wing-warping. The U.S. Patent Office finally granted Patent No. 821,393 on May 22, 1906, to Wilbur and Orville for a flying machine.

September 25–December 17, 1903. When the Wrights arrived at their Kill Devil Hills camp, they first repaired the old living quarters. They also occasionally took their 1902 glider out for flights, and after a few trials both brothers glided for more than a minute and set new world records. After months of delays the 1903 Wright Flyer was ready for flight. Shortly after 10:00 a.m. on the morning of December 17, 1903, the Wright Flyer was moved to a spot on level ground upon the arrival of men from the nearby U.S. Life Saving Station. Orville took the pilot's position; engine and propellers were started. At 10:35 a.m., the machine moved slowly forward under its own power and lifted into the air. The flight covered 120 feet and lasted only 12 seconds. They completed three more flights that day, with the last flight by Wilbur covering 852 feet in 59 seconds.

Wilbur and Orville Wright had solved a mystery that had baffled mankind for centuries. The age of flight had come at last, but only after more than four years of work, four trips to Kitty Hawk, and extensive experiments and research. The Wright brothers' entire inventive process should be commemorated and celebrated as we near the centennial of flight in 2003. The Wright brothers were not just two Daytonians who operated a bicycle shop and happened to fly one day, but dedicated researchers and engineers who focused on a question and followed scientific methods to find the solution.

Notes

1 W. Wright to O. Chanute, May 13, 1900 in Marvin W. McFarland, ed. *The Papers of Wilbur and Orville Wright* (Salem, NH: Ayer Company, Publishers, Inc.,1953) 1:15.

2 The balances are in the collections of The Franklin Institute, Philadelphia, Pennsylvania.

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Marla McEnaney

From Pasture to Runway

Managing the Huffman Prairie Flying Field

In 1998, Wright-Patterson Air Force Base, in conjunction with Dayton Aviation Heritage National Historical Park, undertook a Cultural Landscape Report for Huffman Prairie Flying Field. The flying field, a national historic landmark within Wright-Patterson Air Force Base, is a partnership unit of the national historical park. Dayton Aviation Heritage historical technician Elizabeth Fraterrigo completed a site history, with landscape analysis and evaluation and treatment alternatives currently being determined by this author.

Huffman Prairie Flying Field is the site where Wilbur and Orville Wright mastered the principles of flight. Following their 1903 first flights at Kitty Hawk, North Carolina, the two brothers returned to their Dayton, Ohio, home and from spring 1904 to fall 1905 continued perfecting their flying technique while developing the world's first practical airplane. Their airfield consisted of an 84-acre pasture owned by the Huffman family; the Wrights gained permission to use the property after promising to coax the horses and cows outside the fence during their flights.[1] In keeping with the belief that property rights extended vertically, they remained within the boundary of the field by flying in circles. By October 5, 1905, Wilbur Wright was able to fly for almost 40 minutes, covering a distance of

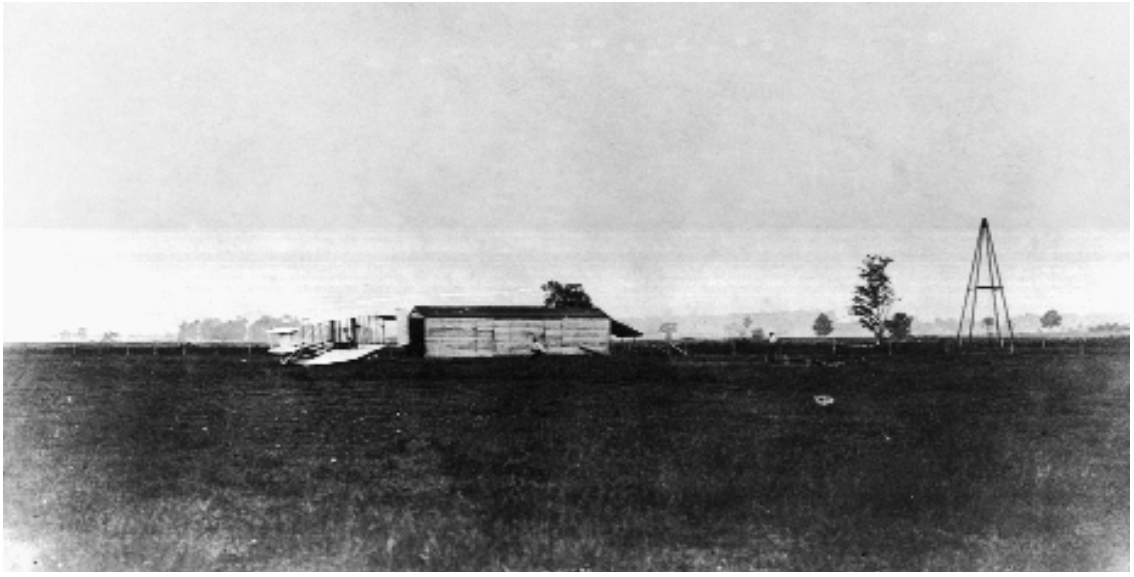
over 24 miles at an average speed of 38 miles an hour. It was the longest flight recorded at that time—longer than all their 1904 flights combined.

At that point, the Wrights turned from experimentation, and from 1906 to 1908, they concentrated on patenting and marketing their invention. In 1910, they once again returned to the Huffman property to open a flight school. Lieutenant Henry "Hap" Arnold, who later became commanding general of the U.S. Army Air Forces in World War II, was just one of the renowned pilots who trained at the Wright School of Aviation.[2] Even though the school closed in 1916, the property retained its link to aviation; in 1917, it was subsumed into one of the military antecedents of Wright-Patterson Air Force Base. It lies today at the end of the base's flight lines. The air above is often filled with planes ascending and landing, a frequent reminder of Wilbur and Orville Wright's contribution to modern aviation.

An analysis of the historic flying field landscape revealed that the site retained several features from the historic period, though there have been contemporary additions. Many of the additions are commemorative in nature and were added as early as 1941. The location of the Wrights' hangars and the corners of the seven-sided pasture were marked in the early 1990s, the former as part of a national historic landmark dedication ceremony. The 1905 hangar was also reconstructed, and although it is a replica, it provides a sense of scale and represents the frugal nature of the Wrights' operations. The remaining additions, which are more intrusive in nature, accumulated over time as the base expanded. All in all, the flying field has a fairly high level of integrity, as its open meadow character is intact, and significant features such as a tree row and remnants of a locust tree can still be found at the site. The locust tree is significant—at the center of their oval flight path, it was used for navigation. It also figured prominently when Orville Wright solved the final problem of aircraft control while turning his flyer in an attempt to avoid crashing into the tree.

Treatment of the landscape will focus on protecting these features while facilitating interpretive programs for visitors.[3] Because the flying field is a simple site with few clues to its historic importance, there is a strong tendency to view it as a backdrop for more dynamic interpretive activities. It is critical, however, to recognize that it is the resource's subtle character that needs to be protected. The preferred treatment approach is to rehabilitate the landscape in order to allow interpretive exhibits to be developed. Any new facilities must be designed and located to avoid intruding upon views within and out of the historic landscape; NPS and Wright-Patterson Air Force Base cultural resource specialists have determined that the earlier period of 1904 to 1905 will be the primary interpretive focus. During this period, the Wrights' experiments at the flying field were unique, in comparison to the 1910–1916 period, when other flight schools were operating and the events taking place at the site were not extraordinary.

The goal for protecting the site is to maintain the more intangible openness and horizontality of the meadow as well as the extant historic features—the tree row and locust tree. The meadow character extends beyond the historic



Wright Flyer III at Huffman Prairie Flying Field, 1905. Courtesy Special Collections and Archives, Wright State University.

Huffman Prairie Flying Field, showing the reconstructed 1905 hangar and a boundary marker. Photo courtesy Dayton Aviation Heritage National Historical Park.

boundaries on the two sides of the flying field that are surrounded by Huffman Prairie. The prairie, a 109-acre parcel that is an Ohio natural landmark, provides a buffer between the historic landscape and base development. The cultural landscape report suggests expanding the area of managed prairie outside the historic boundaries, creating a no-development zone on all sides of the flying field to protect historic views.

The bumpy, closely shorn texture of the flying field's surface changed with the cessation of grazing. During the historic period the pasture was distinct from the taller surrounding prairie. Re-establishing this historic three-dimensional relationship through grazing or mowing is another goal of the treatment program.

The preferred alternative suggests removing all commemorative reconstructions from the site, although a compromise has been reached to retain the 1905 replica hangar. All intrusive elements would be removed, including an access road and shooting ranges adjacent to the flying field. Ground level masonry pads would mark the size and location of the non-extant 1904 and 1910 hangars.[4] The stone masonry would mirror the materials and construction methods of the low chevron-shaped walls that mark each of the seven corners of the field. Concrete markers would be retained, but may be lowered to ground level so they do not interrupt the ground plane.

The predominant challenge to interpreting the site is determining an appropriate level of passive exhibits. Although there is pressure to interpret the entire 1904 to 1916 period, providing literal representations of all the hangars would give a false impression to visitors and obstruct historic views. In addition, the U.S. Air Force will not have unlimited staff or funds to establish scheduled tours, so the site will have to be at least partially self-explanatory. Simple, appropriately sited exhibits would solve the problem of interpreting the site without additional manpower.

All in all, the site provides an excellent opportunity to interpret those remarkable first days of aviation history. The site remains relatively intact, and has the advantage of having a major Air Force installation surrounding it to dramatically show how far aviation has come in less than 100 years. At one site, the visitor can see both the beginnings of aviation and its latest, state-of-the-art manifestations. Careful tending of the landscape and thoughtful interpretive treatments will ensure the site endures into the next century of flight.

Notes

1 Tom Crouch, *The Bishop's Boys: A Life of Wilbur and Orville Wright* (New York: W.W. Norton & Company, 1989), 279.

2 A total of 116 men and women trained at Huffman Prairie Flying Field from 1910–1916.

3 Other than intermittent exceptions, the flying field was closed to the public from 1917 to 1991.

4 The 1904 hangar site has not been definitively located. Until substantive documentation of its location is found, it will not be represented at the site.

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